CALIFORNIA FISH PASSAGE FORUM

STRATEGIC FRAMEWORK

2023–2028

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Cover Photo: A Forum supported project from 2019, led by Trout Unlimited, which restored access to 1.15 miles of steelhead and salmon habitat upstream of the upper Noyo River railway crossing in Mendocino County by replacing the current barrier with a new structure that meets fish passage requirements and can convey a 100-yr flood event with associated sediment and large wood.

Executive Summary

The California Fish Passage Forum is a collaborative entity formed among state, local, and federal agencies, fisheries conservation groups, researchers, restoration contractors, and other interested parties to explore and develop an effective methodology, and plan to restore and recover anadromous fish populations by improving fish passage at man-made barriers. The Forum's mission is to protect and revitalize anadromous fish populations in California by restoring connectivity of freshwater habitats throughout their historic range.

The Forum's primary goal is to restore the connectivity of freshwater habitats throughout the historic range of anadromous fish. This goal is to be achieved through seven objectives including barrier remediation, collaborative work among Forum signatories and partners: funding, permitting, monitoring, policy, education and outreach and science-based applications of fish passage principles.

Forum structure and operation is founded on By-Laws. Participation in the Forum as a signatory is established through a Memorandum of Understanding whereby signatories commit to developing and implementing cooperative strategies aimed at restoring fish access to spawning and rearing habitat. The MOU formally recognizes the Forum's voluntary collaboration and provides mutually agreed upon guidance through its stated goals and objectives, The Forum meets at least bi-annually in different locations in California. During the meetings, issues are resolved, decisions are made, and strategic topics are discussed. Members also form smaller, focused working groups and committees in which specific goals and tasks are addressed.

The Strategic Plan outlines Forum goals and objectives in the recognition that anadromous fish habitats in California have been detrimentally impacted by human-caused and natural disturbances. Man-made barriers to anadromous fish migration include road-stream crossings, irrigation diversions, dams, lack of flow, adequate migration flows, and in-stream structures. Passage impediments affect adult and juvenile fish by delaying or preventing upstream and downstream migration, preventing the use of available habitat, and possibly inflicting injury or death. Thus, the objectives that the Forum seeks to implement focus on identifying and remediating these barriers to improve native aquatic species' connectivity.

Addressing connectivity has been consistently identified as a high priority, cost-effective approach to protecting and restoring anadromous fish populations. State and federal action plans and recovery plans identify fish passage and connectivity as major limiting factors for listed salmonids in California. It is estimated that 45 percent of California's salmon, steelhead, and trout are likely to become extinct in the next 50 years if present trends continue, and 74 percent will likely be extinct in the next 100 years if present trends continue (Moyle et al. 2017).

During the next five years, the Forum seeks to focus on improving the accuracy and functionality of the Passage Assessment Database; supporting a diversity of projects associated with anadromous

fish passage barrier remediation; expanding its membership to include more non-governmental entities; Tailoring FISH*Pass* functionality to best utilize the CA PAD database, end-user application needs, Forum budget, and exploring integration into the national barrier prioritization tool; engaging with other fish habitat partnerships and fish passage practitioners to achieve mutual goals; increasing the diversity of funding sources to support all initiatives; and supporting migration and connectivity via instream flows.

The Forum also seeks to establish mechanisms that report on monitoring to ensure that projects are appropriately designed and implemented. Effectiveness monitoring and publicizing such data is important to evaluate the success of barrier remediation. Lessons learned from monitoring will improve design of fish passage structures, optimize their implementation statewide, and inform adaptive management to benefit anadromous aquatic species.

Overview

The development of this Plan incorporates the work of Forum members (US Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), US Forest Service (USFS), California Department of Water Resources (DWR), California Department of Fish and Wildlife (CDFW), California State Coastal Conservancy (SCC), Pacific States Marine Fisheries Commission (PSMFC), California Trout (CalTrout), Trout Unlimited, and California Department of Parks and Recreation (State Parks)) which together comprise the Forum Steering Committee. The Forum is a collaborative effort among state, local, and federal agencies, fisheries conservation groups, researchers, restoration contractors, and other interested parties to explore and develop an effective methodology and plan to restore and recover anadromous fish populations by improving fish passage through historic waterways. This framework helps to advance California's State Wildlife Action Plan (SWAP) and Steelhead Restoration and Management Plan (SRMP) (Appendix 1), the numerous other plans that address anadromous fish barriers, the goals and objectives of the National Fish Habitat Action Plan, and the vision and leadership of Forum representatives.

This framework defines the vision and goals, strategic objectives, conservation priorities, and strategic actions that will guide the future of the Forum, with a focus on facilitating partnerships related to data gathering, information sharing, planning, prioritizing, implementing, and monitoring fish passage efforts. The Forum will use this framework as a guide to focus efforts at all scales to advance strategic, efficient, credibly funded, accountable investments in fish passage initiatives in California.

Finally, this framework will further the Forum's efforts to coordinate with other conservation and recovery efforts in the western United States, including entities working on fish passage in the anadromous waters of California, fish passage groups from other states as well as other fish habitat partnerships, including the Pacific Marine and Estuarine Fish Habitat Partnership, the Pacific Lamprey Conservation Initiative, and the Western Native Trout Initiative.

Geographic Scope of the Forum

Figure 1. The geographic scope of the Forum encompasses the anadromous waters of California.

Forum Members

The organization of the Forum is based on a Memorandum of Understanding (MOU; Appendix III), through which Forum signatories (Figure 8) commit to developing and implementing cooperative strategies aimed at restoring fish access to spawning and rearing habitat. The MOU formally recognizes the Forum's voluntary collaboration and provides mutually agreed upon guidance through its stated goals and objectives. The MOU also confirms the intent of state and federal fishery resource agencies and other interested parties to participate in and support Forum activities.

Forum members represent a diverse group of agencies and entities with a common interest in fish habitat restoration and fisheries recovery in the state of California. MOU signatory members are:

- Federal agencies
    - US Fish and Wildlife Service (USFWS)
    - NOAA National Marine Fisheries Service (NMFS)
    - US Forest Service (USFS)
- State agencies
    - California Department of Fish and Wildlife (CDFW)
    - California Department of Parks and Recreation (State Parks)
    - California Department of Water Resources (DWR)
    - State Coastal Conservancy
- Nonprofit organizations
    - California Trout
    - Trout Unlimited
- An interstate marine fisheries commission
    - Pacific States Marine Fisheries Commission (PSMFC)

The Forum focuses on four distinct regions in California, each with its own anadromous fish population characteristics, challenges, and issues: North Coast, Central Coast, South Coast, and Central Valley regions. These regions also contain other species of interest that are considered in Forum activities. Although the state and federal MOU signatory members have jurisdictions across these regions, Forum members and partners vary in each region based on their specific jurisdictions and levels of involvement.

Although Forum members develop unique prioritization lists and treatment prescriptions in each of the four distinct California regions, the Forum develops standardized data management systems, assessment protocols, design manuals, and outreach programs that span the full geographic extent of the Forum and address the Forum's strategic planning process.

The Forum aims to meet least bi- annually in different locations in California. During the meetings, issues are resolved, decisions are made, and strategic topics are discussed. Members also form smaller, focused working groups and committees in which specific goals and tasks are addressed.

The Forum's bylaws, which govern the membership and decision-making process, are included in Appendix II.

Parties that have not signed the MOU may participate in Forum activities and attend regular Forum meetings. These members represent local communities and organizations, landowners and utility owners, land and water districts, and others. Though not signatories, these members are an important component of the partnership, and their contributions, in terms of experience and expertise, are important to achieving the Forum's objectives.

Forum Mission, Goal, & Objectives

Mission

To protect and revitalize anadromous fish populations in California by restoring connectivity of freshwater habitats throughout their historic range.

Goals

Restore the connectivity of freshwater habitats throughout the historic range of anadromous fish. To achieve the mission and goal, the California Fish Passage Forum will:

- Improve coordination of existing agency programs, rule and guideline efforts, and private sector activities across jurisdictions to improve the timeliness and cost-effectiveness of fish passage restoration efforts.
- Facilitate collaboration, coordination, and communication among state, federal and local agencies, researchers, restoration contractors, landowners and other interested stakeholders on fish passage improvement programs, funding programs, and projects.
- Expedite implementation of on-the-ground projects by identifying and addressing institutional barriers.
- Educate and increase the public and agency awareness of fish passage issues to develop support for solving problems and preventing new ones.

Objectives

1. Remediate barriers to effective fish migration.
2. Facilitate coordination, collaboration and communication among agencies, agency staff, and other entities that may propose, review, or promulgate fish passage projects within California.
3. Coordinate funding mechanisms to remove fish passage barriers.
4. Support state and federal permit coordination and efficiencies.
5. Facilitate plans to monitor and evaluate fish passage restoration effectiveness to ensure accountability.
6. Encourage existing state/national policy and actions that support fish passage improvement in California.
7. Implement education and outreach activities, targeting both the public & fish passage practitioners.

Objective 1: Remediate barriers to effective fish migration.

I. Obtain and increase funding sources and coordinate and support efforts to remove fish passage barriers in California.

II. Diversify the locations, types and numbers of projects funded by the Forum.

III. Identify, assess, and prioritize the removal of fish passage barriers.

   a. Facilitate the use of the California Passage Assessment Database (PAD), continue to populate it with new data, take steps to update and maintain it on a regular basis.

      i. Continued support of funding for PAD maintenance.

      ii. Support and guide enhancements to the PAD.

      iii. Support **ongoing** process to update PAD barrier data by region, including soliciting and incorporating contributions to the PAD.

      iv. Promote continued public access to the PAD data, including regular public releases of the PAD, online applications of data analysis and reporting, and a document library.

      v. Encourage entities in California to use the PAD and provide input on how their organizations are using the PAD.

      vi. Encourage use of PAD in prioritization efforts.

      vii. Annually include barriers in the PAD which are identified, assessed and remediated as part of forum-supported projects.

      viii. Coordinate addition of PAD data into the National Barrier Prioritization Tool, created by the Southeastern Aquatic Regional Partnership.

   b. Periodically publish and distribute reports of statewide barrier remediation accomplishments.

   c. Fund a series of field assessments, focusing on anadromous watersheds to identify gaps in watershed and barrier information using the PAD and other resources and develop a plan to fill those gaps.

      i. Compile watershed analyses identifying remaining data gaps in the PAD to prioritize barrier inventory and fish passage assessment.

      ii. In watersheds where insufficient barrier data exist, identify and contact entities involved in field data collection to conduct barrier inventories and passage assessments.

      iii. Work with willing private landowners to identify and inventory potential barrier sites.

      iv. Distribute data collection protocols and methodologies to ensure standardized approaches to data collection.

   d. Provide guidance for fish passage practitioners associated with fish passage investments, monitoring, and planning.

Objective 2: Facilitate coordination, collaboration and communication among agencies, agency staff, and other entities that may propose, review, or promulgate fish passage projects within California.

I. Ensure that emerging national, interstate, and state fish passage-related design standards and guidelines are brought to the attention of Forum members in a timely manner.

II. Expand Forum membership to include additional active participating signatories that are non-governmental and can help move the Forums goals and objectives forward.

III. Hold Steering Committee Forum meetings bi-annually or more as needed, and hold recurring meetings of the Governance Committee, Science and Data Committee, Public Outreach Committee and Policy & Permitting Committee.

    a. Generate annual Work Plans for each committee.

    b. Report out progress towards Forum goals from each committee during Forum Steering Committee meetings.

Objective 3: Coordinate funding mechanisms to remove fish passage barriers.

I. Identify funding sources for projects that support fish passage within the geographic scope of the Forum and administer a funding program for projects once funding is secured.

    a. Depending on funding levels, address 5–15 barriers per year.

    b. The Forum will use the PAD, the expertise of Forum members, potential funding from other sources, and the passage criteria to strategically fund high priority projects.

Objective 4: Support state and federal project permit coordination and streamlining.

I. Identify and support opportunities for improved interagency cooperation and permit streamlining.

II. Form a Policy & Permitting Committee within the Forum with an annual Work Plan.

III. Connect project partners with resources to explain the permitting process and promoting efficiency in permitting while ensuring compliance with the State and/or Federal Endangered Species Act requirements any other applicable state or federal laws.

IV. Seek information about functionality of permitting process, including modern streamlined permits, from both permitting agencies and permit applicants (project practitioners) to identify challenges and opportunities for permitting process improvement.

Objective 5: Facilitate plans to monitor and evaluate fish passage restoration effectiveness to ensure accountability.

I. Establish mechanisms to report on monitoring to ensure that projects are appropriately designed and implemented.

II. Establish mechanisms or programs to evaluate changes in habitat use that result from fish passage improvement projects.

III. Establish ways to publicize monitoring results from fish passage projects. The Forum will work with the state and federal agencies and others to gather reporting information and data that document population and habitat changes. A working group will help to coordinate this effort and report back to the larger group.

IV. Develop three annual case studies focused on effectiveness monitoring and share via the Forum website and listserv.

Objective 6: Encourage state and national policy that supports fish passage improvement in California.

I. Coordinate with other Western States to share ideas and promote fish passage policy and efforts. The Forum will work to facilitate joint meetings with other Pacific States.

    a. Plan an interstate Fish Passage Workshop for California, Oregon, and Washington to discuss fish passage issues with national relevance such as fish passage jump height requirements for salmonids.

II. Coordinate with the National Fish Habitat Plan program on developments or changes they are working on regarding national policies that support fish passage through federal programs.

III. Keep apprised of regional, state and federal legislation relevant to fish passage restoration, and share that information periodically with Forum members, and encourage signatories that are in positions to offer letters of support to do so for legislation that advances the Forums mission, goals and objectives.

Objective 7: Implement education and outreach activities, targeting both the public and fish passage practitioners.

I. Support development and implementation of effective education and outreach programs to engage and inform the public and private landowners about aquatic habitat fragmentation and fish passage improvement opportunities.

II. Create and distribute fish passage outreach material that succinctly demonstrates fish passage issues in California and the Forum's history and purpose.

III. Communicate fish restoration activities to other agencies, landowners, watershed groups and others within each basin.

IV. Implement workshops to train local agency field crews or other interested groups to properly conduct fish passage evaluations.

V. Host at least one annual outreach event that promotes the need and benefits to anadromous fish passage barrier remediation efforts in California.

VI. Compile fish passage barrier remediation progress annually among Forum member agencies and organizations and share with policy makers and others to garner continued support and funding for these efforts.

VII. Engage with other congressionally recognized FHPs such as the Pacific Lamprey Conservation Initiative, Pacific Marine and Estuarine Partnership, the Western Native Trout Initiative to promote and support projects of mutual interest.

VIII. Conduct outreach to agencies, organizations and tribal nations that may develop passage criteria, regulations, or guidelines to include the Forum in scoping, comments, and other public/agency coordination.

IX. Take steps to engage and inform fish passage engineers in all aspect of fish passage barrier remediation.

National Fish Habitat Conservation Priorities

As a fish habitat partnership supported and recognized by the National Fish Habitat Partnership (NFHP). The Forum supports the National Conservation Priorities established by the NFHP Board.

Conserve waters and habitats where all processes and functions are operating within their expected range or natural variation. - This priority focuses action on acquiring or protecting in other ways fish habitats that are currently functioning and are considered intact for the purpose of preventing future degradation. In essence: protect what is currently working.

- **Conserve hydrologic conditions for fish. -** This priority focuses on ensuring that appropriate hydrologic (annual and daily flows and water levels) and hydrodynamic (current or velocity) conditions are always available to allow fish to optimize their production. This is accomplished by rehabilitating degraded and improving engineered hydrographs and hydrodynamic conditions to ensure all needed fish habitats are available at the appropriate times.
- **Conserve physical and living habitats and features that support viable and sustainable species and/or populations in impacted or at-risk systems**. - This priority focuses on protection, rehabilitation, and/or enhancement of those critical habitat features within a waterbody that are necessary to support ecological function and processes such as structure, vegetation, and habitat complexity that may be lacking, may have been altered, or simply may not be functioning effectively.
- **Reconnect fragmented fish habitats. -** When aquatic habitats lack full connectivity, fish cannot freely move among the places they need to complete their life cycle and maximize their production. This priority is focused on identifying, removing, rehabilitating, or

otherwise addressing anthropogenic barriers so they no longer restrict fish movement and instead allow fish to access habitats, migrate, locate refugia, and seek food and mates.

- **Conserve water quality for fish. -** This priority focuses on efforts to conserve the physical, chemical, and biological aspects of water quality, mitigate impairments, and restore degraded conditions to support improved fish habitat.
- **Support the structure and function of Fish Habitat Partnerships. -** The FHPs conduct the foundational work necessary to ensure that NFHP achieves its mission to protect, restore and enhance the nation's fish and aquatic communities through partnerships that foster fish habitat conservation and improve the quality of life for the American people. This priority focuses on supporting strong and effective FHPs and their unique approaches to collaborative, science-driven fish habitat conservation.
- **Enhance recreational, commercial, subsistence, and traditional fishing opportunities when conducting projects that conserve fish habitat.** - This priority includes actions that are intended to broaden support for fish habitat conservation, increase fishing opportunities, support traditional fishing practices, and increase participation in fish habitat conservation activities by local communities, particularly young people, by improving access, education, and participation.

Recommendations and Guidance for Regional-Scale Projects

On a regional scale, the Forum will continue to implement and further develop the following tasks:

- Facilitate coordination and communication among Forum members.
- Improve the State's ability to implement fish passage restoration projects by coordinating agency and private sector efforts.
- Coordinate and secure adequate funding for fish passage restoration.
- Expedite implementation of on-the-ground projects by consistently connecting project partners with resources to explain the permitting process and promote efficiency in streamlining permitting while ensuring compliance with the State and/or Federal Endangered Species Act requirements any other applicable state or federal laws.
- Require projects that receive forum funding produce a monitoring plan and check for monitoring activities in periodic progress reports. Encourage the use of standardized monitoring methods and protocols, and reports.
- Keep apprised of regional, state and federal legislation relevant to fish passage restoration, and share that information periodically with Forum members, and encourage signatories that are in positions to offer letters of support to do so for legislation that advances the Forums mission, goals and objectives.
- Implement education and outreach, targeting both the public and fish passage practitioners to develop support for solving problems and preventing new ones.

Recommendations and Guidance for Local-Scale Projects

At the local scale, the Forum will provide guidance and assistance to partners as they identify and implement restoration projects and activities to maintain, restore, or enhance habitat for anadromous fish species.

- Improve and Maintain Habitat Quality and Quantity
    - Establish comprehensive strategies to prevent the loss or reduced quality of habitat for anadromous fish by removing passage barriers.
    - Promote additional habitat improvements that complement restored connectivity, including, but not limited to restoration of natural flow and temperature regimes, natural sediment supply, physical channel and structural habitat restoration such as reconstructing natural meander patterns, addition of large woody debris, and non-native species control.
- Enhance and/or Restore Connectivity beyond the Removal of Manmade Passage Barriers
    - Identify and implement strategies to minimize and mitigate the negative effects of water development projects and stream diversions to connectivity.
    - Identify existing in-stream modifications (past mining activity) that may inhibit movements and develop strategies and projects to mitigate or remove elements that contribute to habitat fragmentation.

Climate Change and the Forum

The impacts of climate change vary among species and populations and depend on multiple and diverse factors (Dalton et al. 2013); however, climate change pace currently exceeds the rates at which species can colonize new suitable habitat (Comte and Grenouillet 2013). The following are some documented effects of climate change:

- Introduces new stressors and compounds existing stressors on fish as well as increases the frequency and magnitude of extreme floods (Jospe 2013).
- Decreases carrying capacity (Walters et al. 2013) and affects disease resistance, development rates, spawning and migration timing and other biological events, and ocean survival of anadromous fish (Crozier et al. 2011).
- Affects productivity, species distributions, recruitment, and community structure (Osgood 2008), and causes altitudinal shifts, population collapse, local extinctions, failure to migrate, and changes in food availability and food web structure (Portner and Farrell 2008).
- Affects water temperature and the magnitude and timing of stream flows, which affect all aspects of salmon development, rearing, and migration (NOAA-NWFSC 2008).

- Affects nutrient cycling and reciprocal terrestrial-stream subsidy balances (Wenger et al. 2011).
- Affects sea level, air temperature, ocean temperature and circulation patterns, precipitation patterns, air and ocean chemistry (acidification), tropical storm intensities and frequencies, and species abundance and distribution (NOAA 2010).
- Exacerbates non-climate stressors, such as pollution or overharvesting, thus affecting adaptive capacity (Seney et al. 2013).
- Causes habitat loss or alteration, distribution changes or extirpation of populations unable to adapt or migrate, shifts in phenology, disrupted predator-prey interactions, reduced food supply, increased stress, disease susceptibility, and predation (Seney et al. 2013).
- Increases stream temperatures in rivers. The threat to salmon recovery is great in locations where temperatures are near lethal or sub-lethal thresholds for salmon, but not as significant in rivers where current temperatures are well below those thresholds (Beechie et al. 2012). Altered stream flows and warmer temperatures affect survival and passage through tributaries for anadromous fish that require river systems and coastal regions for all or a portion of their life cycle (Osgood 2008).
- Promotes the introduction and establishment of non-native species typically found in warmer areas (NOAA 2010).
- Changes salinity levels for prolonged periods of time, resulting in habitat loss for some species (Burkett and Davidson 2012). Changes in salinity may also facilitate invasion by nonnative species better adapted to salinity variations (Hoy et al. 2012).
- Changes water temperatures, flow regimes and salinity concentrations and may result in reduced target species use of restored habitats (e.g., diadromous fish) (NOAA 2010).
- Raises sea level, warms ocean temperatures, and changes freshwater flows, contributing to significant changes in estuarine habitats (Bottom et al. 2005).
- Increases flooding and flash flooding from more intense rainfall events that may cause degradation of the habitat through increased channel erosion, siltation, and destruction of pools and riffles (NOAA 2010).

Increasing connectivity by removing barriers may be one of the most effective ways to mitigate the effects of climate change on aquatic systems, but it is important to remove the most limiting barriers (Jospe 2013), which requires an understanding of connectivity within stream networks (McClurg et al. 2007; Palmer et al. 2008) (Figure 8).

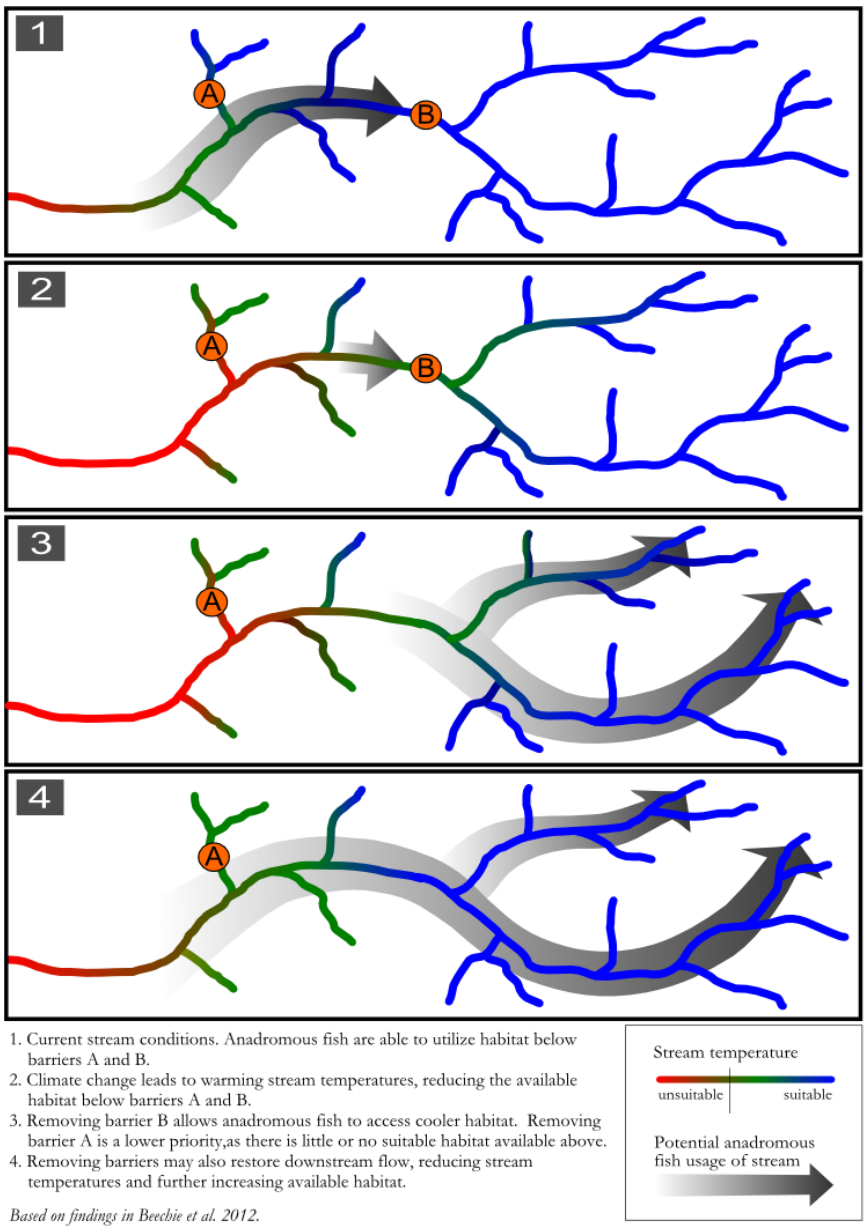

Figure 8. Removing fish barriers may restore downstream flow, reduce stream temperatures, and increase available habitat.

The following management recommendations are based on the life history needs of anadromous fish in California and the anticipated effects of climate change on fish:

- **Conduct a coordinated and comprehensive fish passage improvement program** to restore unimpeded passage for aquatic organisms in anadromous systems (California Fish Passage Forum 2013). Improving connectivity within aquatic ecosystems requires a strategic approach to identifying and prioritizing barrier removal.
- **Prioritize geographic regions and restoration project types** to express a larger suite of life-history strategies, important for species persistence and recovery. Improvements in habitats that support the spectrum of life-history strategies would further support recovery (Jorgensen et al. 2013). Understanding which types of restoration actions are robust to climate change is critical for effective recovery of federally listed populations (NOAA-NWFSC 2008). Because restoration actions focused on in-stream stabilization are unlikely to ameliorate climate change effects, it is important to understand current recovery needs; whether climate change effects will likely alter those needs; whether restoration actions can ameliorate climate change effects; and whether restoration actions can increase ecosystem resilience (Beechie et al. 2013) and ultimately improve overall connectivity within systems.
- **Enhance connectivity by restoring and protecting key ecosystem processes and features** to moderate effects of changes in climate and advance the recovery of endangered species (Boughton and Pike 2013).
- **Offset predicted increases in stream temperatures** by maintaining stream flows and protecting and restoring riparian habitats (Wenger et al. 2011).
- **Carefully review projects predicted to support spawning and rearing habitats**, especially where inventory in watersheds is lacking (Rieman and Isaak 2007).
- **Focus regional priorities** on the potential for short-term loss of ecological and evolutionary significance in marginal populations and the potential for long-term persistence in core habitats (Rieman and Isaak 2007).
- **Protect intact freshwater ecosystems by protecting large geographic areas** that serve as buffers and help to promote resilience (Dudgeon et al. 2006). Protection of large areas helps to ensure connectivity among and within stream systems.

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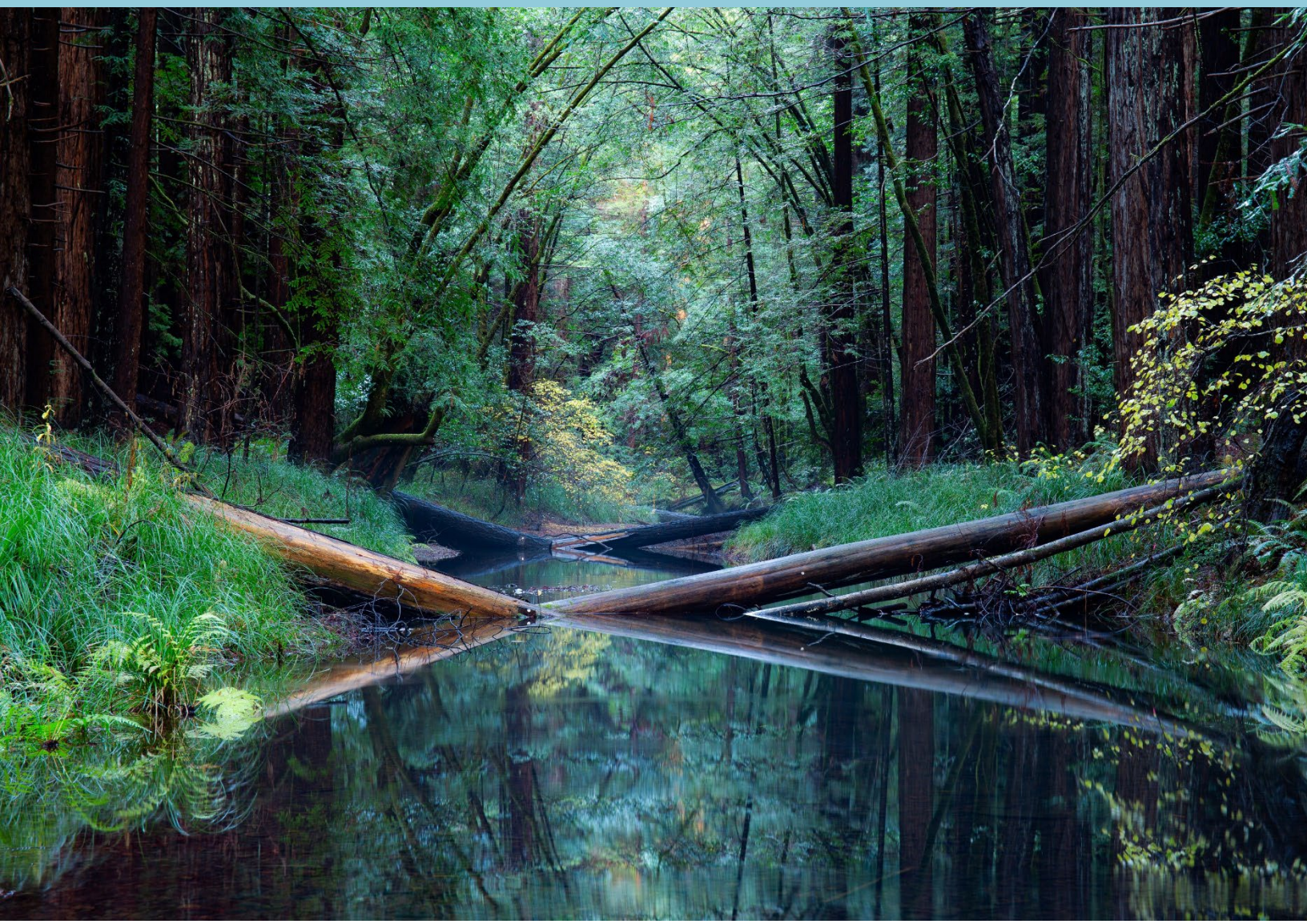
CALIFORNIA FISH PASSAGE FORUM

APPENDICES

STRATEGIC FRAMEWORK

2023–2028



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Appendix I – Links to California State Wildlife Action Plan and Steelhead Restoration and Management Plan for California

The Forum addresses problems and issues associated with fish passage throughout the state, however, four areas receive most of the Forum's focus and are primary regions listed in the California State Wildlife Action Plan (SWAP). These are the North Coast-Klamath, the Central Coast, the South Coast, and the Central Valley-Bay Delta Region.

Most of California's river segments with state or federal Wild and Scenic River designations are in the North Coast–Klamath Region, including portions of the Klamath, Trinity, Smith, Scott, Salmon, Van Duzen, and Eel. Anadromous fish species include coho and Chinook salmon, steelhead, coast cutthroat trout, green sturgeon, and Pacific lamprey. The region has experienced significant declines in its fish populations, with an 80 percent decline in salmon and steelhead between the 1950s and 1990s (California State Lands Commission 1993).

On page 261 and 262 of SWAP are "Conservation Actions to Restore and Preserve Wildlife." Action "b" states,

> "Federal, state, and local agencies and private landowners should work to restore fish passage in aquatic systems important for anadromous and wide-ranging fish populations. Efforts to restore fish passage will require cooperative efforts by private owners of dams and water supply companies and partnerships among a wide range of agencies, including such state and local agencies as the State Water Resources Control Board, Caltrans, local water districts, city and county public works departments, and Fish and Game; federal agencies, such as NOAA (National Oceanic and Atmospheric Administration) Fisheries and the Federal Energy Regulatory Commission; other stakeholders, such as Native American tribes; and nongovernmental organizations, land trusts, and watershed councils.

Agencies and partners should continue to update and maintain the Coastal Conservancy's Passage Assessment database (PAD) to seek and prioritize opportunities to implement fish passage improvement projects. (A link to the database is available at http://www.calfish.org, under the sidebar heading, Fish Passage Assessment.)

Where feasible, fish barriers should be removed or modified. Fish ladders or other means of passage around dams, small-scale diversions, and other impediments should be installed (CDFW 2004g)."

In the Central Coast, the SWAP describes fish passage as a stressor to anadromous fish (Pages 216 and 217).

> "Dams and smaller structures such as road crossings can fragment watersheds. As shown above, more than 70 dams and roads create complete barriers to fish passage." "Other

artificial structures, such as culverts, low-water road crossings, pipeline crossings, and bridges, also block migration, stream flows, and sediment transport."

Page 228 of SWAP lists "Conservation Actions to Restore and Preserve Wildlife." Action "f" provides guidance for the Central Coast:

> "Federal, state, and local agencies should work to restore fish passage in aquatic systems important for anadromous and wide-ranging fish populations. Efforts to restore fish passage may require multi-agency partnerships involving such state and local agencies as the State Water Resources Control Board, Caltrans, local water districts, city and county public works departments, and Fish and Game; federal agencies, such as NOAA (National Oceanic and Atmospheric Administration) Fisheries, the National Marine Fisheries Service, and the Federal Energy Regulatory Commission; and nongovernmental organizations, such as Trout Unlimited, land trusts, and watershed councils. The cooperation of private owners of dams and water supply companies will also be needed."

Actions recommended in the SWAP include:

- Continue to inventory and assess barriers to fish passage, update and maintain the Coastal Conservancy's database of barriers, and use the database to prioritize and seek opportunities to implement fish passage improvement projects (CDFW 2004g). The Coastal Conservancy's database is available at http://www.calfish.org, under the Fish Passage Assessment link.
- Where possible, remove or modify structures and barriers to allow passage. Install fish ladders or other means of passage around dams, diversions, and other impediments, including road crossings, pipelines, and culverts. Monitor fish-passage improvement projects to assess benefits to fish populations and to document lessons learned."

In the South Coast Region, the SWAP also references the decline of anadromous fish and the need for improving connectivity of their habitat. On page 175:

> "Steelhead illustrate the severity of the situation, having declined from historical populations in the tens of thousands to current numbers of between 200 and 300 fish (CCC 2001, Larson 2005 pers. comm.). Historically, greater connectivity between watersheds allowed species to recolonize after sedimentation events. Today, however, roads and water diversions have fragmented and isolated stream systems, making it difficult for species to recolonize areas where they have been locally extirpated."

The "Conservation Actions to Restore and Preserve Wildlife," (page 188 of the SWAP), Action "f" notes:

> "Because of the high level of urbanization in the South Coast Region, even the most intact systems will typically need some restoration work. Important restoration actions include enhancing riparian habitat and vegetation; relocating or removing confining levees to allow

river-channel meandering and reconnection of rivers with their floodplains; removing dams, diversions, or other obstacles to sediment transport and fish passage…"

The "Steelhead Restoration and Management Plan for California" (SRMP) (DFG 1996), notes:

> "The major factor causing the decline in California is freshwater habitat loss and degradation. This has resulted mainly from three factors: inadequate stream flows, blocked access to historic spawning and rearing areas..." (Executive Summary, page 1).

Recommendations for restoration under "Instream Habitat" on page 74 of the SRMP says that:

> "Habitat restoration projects that attempt to 1) correct problems created by watershed damage or 2) restore access to historic habitats through barrier modification or removal should receive the highest priority for funding."

In 2003, California Fish and Wildlife completed the Recovery Strategy for California Coho Salmon. The recovery strategy's recommendations include planning and regulating water supply development and water rights to ensure adequate stream-flow levels and timing; elimination of barriers to fish passage where possible; and restoration and land management practices that improve habitat conditions. The recovery strategy also provides specific recommendations for individual watersheds and rivers, prioritizes watersheds according to restoration and management potential, and prioritizes the tasks needed to achieve the plan's goals. Restoring fish passage is a high priority in most watershed recommendations.

Appendix II- California Fish Passage Forum Bylaws

ARTICLE I. Name, Purpose, and Geographic Area

Section 1 – Name: The name of the organization shall be the California Fish Passage Forum (Forum).

Section 2 – Purpose: The California Fish Passage Forum (Forum) is an association of agencies and entities dedicated to restoring connectivity of freshwater and estuarine habitats throughout the historic range of anadromous fish in California by promoting collaboration among public and private sectors for fish passage improvement projects and programs.

A. Through cooperation, education, communication, and advocacy, the Forum is committed to ecological restoration and ecologically sensitive management of ecosystems in the territory defined in Section 3 of this Article. The Forum is committed to applying science-based adaptive management practices. The Forum's main goal is to protect, restore and enhance processes within watersheds (and ecosystems therein) required to preserve, enhance and restore connectivity, structure, functionality, and diversity. The Forum will only take actions

that provide a net benefit to native species. Ecological restoration is the process of intentionally altering a site to establish a defined, indigenous, historic ecosystem. The goal of this process is to emulate the structure, function, diversity, and dynamics of the specified ecosystem.

B. The Forum is committed to restoring hydrological and ecological connectivity within anadromous fish habitat wherever possible.
C. The Forum is committed to do any lawful activities which may be necessary, useful, or desirable for the furtherance, accomplishment, fostering, or attainment of the foregoing purposes, either directly or indirectly and either alone or in conjunction or cooperation with others, whether such others be persons or organizations or any kind or nature, such as corporations, firms, associations, trusts, institutions, foundations, or governmental bureaus, departments, or agencies.
D. The organization shall act in a manner consistent with, but not limited by, the bylaws, objectives, policies, and positions as adopted by the Forum. In general, it will also follow the guidance of the program goals and objectives of the National Fish Habitat Partnerships (NFHP) as well as the standards and tools needed to collect, understand, manage, analyze, and share those data.

Section 3 – Geographic Area and Keystone Species: The geographic area encompassed by the Forum shall include the historical and present anadromous habitat of Chinook Salmon (*Oncorhynchus tshawytscha*), Steelhead Trout (*Oncorhynchus mykiss irideus*), Coho Salmon (*Oncorhynchus kisutch*), Coastal cutthroat trout (*Oncorhynchus clarki clarki*), Pacific lamprey (*Entosphenus tridentatus*), sturgeon (*Acipenser* spp.), and other native anadromous fish species in the State of California, as defined at http://swr.nmfs.noaa.gov/recovery/domains.htm.

ARTICLE II. Voting Membership and Forum Governance

Section 1 – Forum Steering Committee: Any entity or individual who signs the Forum MOU is a member of the Forum Steering Committee. The Forum Steering Committee members (members) are responsible for overall policy and direction of the Forum, as well as for the establishment and direction of other committees and working groups.

The Forum seeks membership that represents the geography and organizational diversity of entities seeking to advance fish passage in the geographic scope of the Forum. Forum representatives may be added through the initiation or invitation of the Forum or by Forum representatives nominating an entity.

Members manage the affairs of and provide overall policy guidance for the Forum.

- Steering Committee representative roles and responsibilities:

- Establish the overall direction and policies for the Forum consistent with the purpose and objectives above and as defined in the Forum's MOU.
- Select and establish direction for the work of committees or task forces.
- Approve and ensure implementation and updates of the strategic framework. Monitor activities and projects initiated as part of the strategic framework.
- Approve and ensure implementation of an Annual Work Plan, budget (if any), and any revisions thereto.
- Offer capacity, technical assistance and funding when possible.
- Suggest quarterly agenda items to advance the Forum's strategic framework.
- Agree to support and advance the goals and objectives of the Forum.
- Provide guidance and leadership to the Forum Coordinator.
- Assist in coordinating and leading efforts that engage partner organizations.
- Attend all Forum meetings/conference calls and other activities in which the Forum convenes; Forum representatives are expected to actively engage in the National Fish Habitat Partnership.

Nominations—Members may sponsor nominees. The member must notify the Forum Coordinator and provide written documentation (from a member or the nominee) articulating why the entity is interested in participating on the Steering Committee. The Forum Coordinator distributes nominations to Forum representatives, who have 30 days to review and discuss a pending nomination before a decision is made.

- Members have a right to a named alternate (alternate); the Forum Coordinator must be notified of the alternate in advance of the meeting. An official letter naming a member and alternate from each of the Forum's MOU signatories is required.
- Each member is entitled to one and only one voting right on the Forum or its committees.
- The total number of members shall not exceed 20.
- If a member misses three meetings (Forum conference calls, etc.), the member will be formally approached to discuss interest in future participation.

Section 2 – Chair and Vice-Chair: The Forum Steering Committee shall always have a Chair and a Vice-Chair. The Chair and Vice-Chair will serve concurrent two-year terms; with the Vice-Chair moving into the Chair position at the end of the two-year term. Any Forum MOU signatory is eligible to be elected to Chair or Vice-Chair positions; nominations from the Forum Steering Committee for Vice Chair candidates will occur three months prior to the end of the two-year terms. Vice-Chair candidates will be identified for the upcoming and following term – such that each signatory has the

opportunity and anticipated duration to serve in this Forum management succession. If the Vice-Chair is voted to serve as Chair during his/her Vice-Chair mid-term, or if the Chair or Vice-Chair resigns, the Forum will hold a special election to fill the newly vacated positions through the end of the two-year term.

- Chair role and responsibilities:
    - Represent the Forum as its point person and spokesperson.
    - Seek opportunities to solicit new Forum representatives to expand the capacity of the Forum to address fish passage issues in California.
    - Serve as a member of the Governance Committee.
    - Facilitate periodic communication among Forum members to ensure progress on Forum action items.
    - Communicate with the Vice-Chair to ensure effective coordination, issue identification, and strategic implementation of action items.
    - Work with the Forum Coordinator to develop and finalize the agenda for Forum meetings.
- Vice-Chair role and responsibilities:
    - Assist Chair in carrying out his/her duties, particularly in the absence of the Chair.
    - Monitor implementation of Forum goals and objectives by working with the Forum Coordinator on the development of the annual report.
    - Work directly with Forum representatives when issues arise associated with attendance and participation.

Section 3 - Resignation and Termination of Steering Committee

Any member may resign by providing 30-days' notice to the signatories of the MOU and submitting a written resignation to the Chair.

Section 4 – Non-voting partners: The general non-voting membership (partner organization) is open to any entity that supports the purpose statement in Article I, Section 2.

Roles and responsibilities of partner organizations:

- Agree to support and advance the goals and objectives of the Forum.
- Be genuinely interested in the Forum and an external advocate for its goals/objectives.
- Actively participate.
- Offer capacity, technical assistance and funding when possible.

Section 5 – Quorum: A simple majority (i.e., more than half) of the voting membership (either the official representative or the alternate representative for each of the Forum's signatories), present at a meeting, constitutes a quorum. Proxy voting is not allowed. To be a valid act of the Forum, a simple majority of the quorum is needed. If a simple majority of the quorum votes in favor of postponing voting on an item until members have had time to consult with their agencies or organization, voting on that item shall be postponed until the time the voting membership determines.

Section 6 – Meeting frequency and purpose: Meeting purpose: Meetings of the membership shall be held at least two times each year in varying locations throughout the state for the purpose of sharing information pertinent to the group's purpose, receiving reports from the committees, receiving a financial report (if any), and discussing other items of business on the agenda. Forum meetings are open to the public; however, they are not "public meetings." Partner organizations of the Forum and others are welcome to attend.

Section 7 – Voting: Voting shall be open to any member that supports the purpose statement in Article 1, Section 2; voting privileges are granted after signing the Forum MOU.

Section 8 – Correspondence: From time to time, the Forum may send correspondence deemed consistent with the Forum's mission. The proposed correspondence will either be considered and approved at Forum meetings, or via email query of the Forum membership. Consideration and approval of outgoing correspondence will require a quorum if at Forum meetings, or approval of at least 2/3 of Forum members responding to notification by the Chair via email. Notifications of such communications will occur no less than one week before sending of any correspondence.

ARTICLE III. Committees and Working Groups

Section 1 - Committee formation: Members shall create standing committees as deemed necessary. Committee membership is voluntary, and is opened to member Representatives or alternates. Unless otherwise specified in these Bylaws, the Chair shall appoint from the membership, subject to the approval of the voting membership by simple majority, a Chairperson of each committee. All Committees will be comprised of Forum member organizations, and other experts accepting the invitation to participate, if in the view of the responsible Committee, they can further the effort of the Forum. No member organization shall have their representative and alternate serve on the same Committee. New Committees shall be created by a vote of minimally sixty-five percent [super-majority] of member organizations.

The following committees shall be established by virtue of the establishment of these bylaws:

Steering Committee (described in Article II, Section 1)

Governance Committee role and responsibilities:

- Coordinates the Forum's collective work plans and budget.
- Coordinates and communicates with NFHP regarding, but not limited to, administrative requests, reporting, project solicitations and "10 Waters to Watch" efforts.
- Drafts Forum business documents, such as press releases, the Strategic Framework, bylaws, the Forum's MOU, letters of support, grant applications, application forms and score sheets.
- Assists in coordination of Forum efforts and ensures member participation in Forum meetings, working groups and committees.
- Facilitate the formation of work groups and assist Forum work groups and committees as needed.

Permitting and Policy Committee role and responsibilities:

- Addresses issues deemed significant by the Forum and associated with project permitting and policy pertaining to fish passage and fish connectivity in the State of California.

Education and Outreach Committee role and responsibilities:

- Addresses high priority outreach actions associated with Forum initiatives. Working with Forum committees and working groups, this committee develops short- and long-term strategic actions to advance understanding, awareness, and appreciation of the role of the Forum in making strategic investments in fish passage barrier removal in the State of California.

Science and Data Committee role and responsibilities:

- Creates and coordinates working efforts to address data and science needs important to achieving Forum's goals and objectives. The Science and Data Committee collaborates with the NFHP Science and Data Committee to the extent possible and participates in the California LCC Science-Management Team to address shared goals and objectives.

Section 2 – Working Groups: Each standing committee shall appoint various working groups for the purpose of implementing and administering defined projects or furthering specific objectives of the Forum. *Working groups* shall be discharged when their work has been completed. Working Group membership is voluntary, and is open to 1) all meeting attendees in the Forum and 2) other experts accepting the invitation to participate if, in the view of the responsible Committee, they can further the effort of the Working Group and the Forum. Working groups shall have at least one Forum Representative or alternate as a member, and unless decided otherwise by the responsible

Committee. Working groups may be led by a non-Forum signatory. Committees shall be responsible for the formation, efforts, products, reporting, and discharge of their working groups. The following working groups are currently established as of 5/6/2013:

Barrier Prioritization and Optimization Working Group

The Barrier Prioritization and Optimization Working Group was formed to develop and implement a highly strategic and efficient means to prioritize fish passage barriers in the anadromous waters of California. Working with existing fish passage barrier data from the California Passage Assessment Database, the working group is using an optimization-based approach to develop a tool that will allow potential barrier projects and sites to be prioritized for funding or targeted for project development. This multi-function tool will serve many purposes for the Forum, each of our signatory entities and fish passage and habitat restoration practitioners and managers within California. The working group also envisions this methodology becoming a powerful potential resource for prioritization of natural resource protection and restoration nationwide.

Engineering Working Group

The Engineering Working Group was formed to provide a forum for discussion and cooperation regarding information needs and engineering-related data management, fish passage design criteria, design alternatives, and construction methods. The Engineering Working Group is also responsible for consideration of means of information sharing and identification of research needs and collaborative research opportunities. In addition, the Engineering Working Group may consider potential for training opportunities and cooperate with other Forum committees and working groups on evaluations and analysis of policies.

Section 3 – Committee and Working Group Current Membership: A current list and rosters for current committees and working groups can be found at http://www.cafishpassageforum.org.

ARTICLE IV. Documenting The Work of The Partnership

- Steering committee action items and major decisions will be documented on the Forum website.
- Important documents will be posted on the website.
- The Forum Coordinator or his/her designee is responsible for recording official actions, taking notes each time the steering committee convenes, and posting official documents on the Forum website.

ARTICLE V. Amendments to Forum Bylaws

These bylaws may be amended when necessary, by two-thirds majority of the voting membership. Proposed amendments must be submitted to the Forum Chair to be distributed with regular voting membership announcements.

Appendix III – Forum Memorandum of Understanding

A COLLABORATIVE APPROACH TO RESTORING FISH PASSAGE BY THE CALIFORNIA FISH PASSAGE FORUM

Entered between:

US Fish and Wildlife Service (USFWS)

NOAA National Marine Fisheries Service (NMFS)

Forest Service (USFS)

State agencies

- Department of Fish and Wildlife (CDFW)
- Department of Parks and Recreation (State Parks)
- Department of Water Resources (DWR)
- Wildlife Conservation Board (WCB)
- State Coastal Conservancy

California Trout

Trout Unlimited

Pacific States Marine Fisheries Commission (PSMFC)

Environmental Policy and Innovation Center (EPIC)

Sustainable Conservation

American Rivers

Hereafter referred to as the Forum.

Problem Statement

Anadromous fish habitats in California have been detrimentally impacted by human-caused and natural disturbances. Man-made barriers to anadromous fish migration include road-stream crossings, irrigation diversions, dams, and many other in-stream structures. Passage impediments affect adult and juvenile fish by delaying or preventing upstream and downstream migration, preventing the use of available habitat, and possibly inflicting injury or death.

Addressing connectivity has been consistently identified as a high priority, cost-effective approach to protecting and restoring anadromous fish populations. Restoring unimpeded passage for aquatic organisms in anadromous systems is imperative for the success of all other habitat restoration activities. State and federal action and recovery plans regularly identify fish passage and connectivity as primary limiting factors for migratory aquatic species in California.

A coordinated and comprehensive fish passage improvement program is fundamental to addressing fish passage barriers. The Forum, a consortium of federal, state, nonprofit and private sector organizations, was established in response to significant declines in Coho Salmon, Chinook Salmon, and steelhead. At least one population of all of these species are federally listed as either threatened or endangered within California, and efforts are underway to recover their populations. In addition, the Forum recognizes the significant impacts of passage barriers to other migratory aquatic species including, but not limited to, Pacific Lamprey, Green Sturgeon, Klamath Basin Lost River Sucker, and Shortnose Sucker.

II. Background

California's historically bountiful anadromous fishery depends on the ecological integrity of dozens of streams and rivers that flow into the Pacific Ocean along the state's 1,100-mile coastline. These streams provide the habitat that salmonids and other anadromous fish require during the spawning and juvenile phases of their life.

During the 19th and 20th centuries, as roads, bridges, and dams were built on public and private lands along waterways, and as water was diverted by various means, thousands of barriers were erected, blocking the passage of anadromous fish. These barriers impact both adult and juvenile fish by preventing full use of available habitat or altering habitat and hydraulic conditions. Consequently, many salmon, steelhead, trout, lamprey, and sturgeon populations have experienced significant declines, and the sport and commercial fisheries that depended on some of these populations have, in many cases, vanished.

Man-made barriers to fish passage include road/stream intersections, pipeline or other infrastructure crossings, erosion control/flood control structures (rip-rap, concrete channels, e.g.), and dams that block or delay migration. In some cases, previously installed fish passage structures, such as fish ladders, act as barriers because of poor design or construction as well as lack of maintenance.

In October 1999, the Resources Agency established the eight-point California Coastal Salmon and Watersheds Program, which called for the coordination of State, federal, and local partners working toward the goal of restoring salmon and steelhead populations to naturally sustainable levels. At the time, fish passage barriers were recognized as a major threat to anadromous fish species in California and their removal or modification could potentially yield the greatest cost-efficiency for short-term restoration activities. Based on this recognition, the program included an objective to coordinate fish passage activities in California.

To accomplish this objective, the Natural Resources Agency (CNRA) convened a group of interested state, local and federal agencies, fisheries conservation groups, researchers, restoration contractors and others to discuss ways to improve fish passage at man-made barriers. The success of this coordination led to the establishment of the Forum, of which many agencies and organizations are members.

The Forum identified the need for improved efforts to identify barriers, evaluate and prioritize restoration opportunities, and implement projects in a timely fashion. It also targeted administrative, financial and technical impediments to addressing these issues, including information gaps, lack of watershed-level assessment and planning, and poorly coordinated project review and permitting processes. Forum participants worked together to develop short-term solutions for these types of problems for several known high priority fish passage projects. They also established subcommittees for coordinating activities related to fish passage inventory and assessment protocols, data format and access protocols, information and literature collection, research, policy, design criteria permitting, training, and public education and outreach.

The Forum's highest initial priority for restoring passage for California anadromous fish was to determine the quantity, location and severity of existing migration barriers. Through a FY'01/'02 legislative appropriation from Proposition 12 sponsored by Assemblyman Byron Sher, the Coastal Conservancy was directed to conduct an "inventory of fish passage barriers located on coastal streams that impede access to freshwater spawning habitats for anadromous fish species." Subsequently, the Conservancy retained the Pacific States Marine Fisheries Commission to develop the Passage Assessment Database (PAD), a map-based inventory of known and potential barriers to anadromous fish in California, now maintained through a cooperative interagency agreement.

The Forum seeks to understand watershed fragmentation throughout California. Current focal areas, each with their own anadromous fish population characteristics, challenges, and issues, include: the North Coast, Central Coast, South Coast, and Central Valley regions. These regions also contain other species of interest that are considered in Forum activities. Although the state and federal MOU signatory members have jurisdiction across all of these regions, the additional Forum members and partners vary in each region based on their specific jurisdictions and levels of involvement.

Although Forum members develop unique prioritization lists and treatment prescriptions throughout California regions, the Forum attempts to develop standardized data management

systems, assessment protocols, design manuals and outreach programs that cover the full geographic extent of the Forum and address the Forum's strategic planning process.

The Forum meets biannually, or more as needed, in different locations in California. During the meetings, issues are resolved, decisions made and strategic topics discussed. Members also form smaller, focused working groups and committees in which specific goals and tasks are addressed. The Forum developed bylaws, which govern the membership and decision-making processes.

In 2012, the Forum became one of 20 nationally recognized Fish Habitat Partnerships (FHPs). The FHPs "protect, restore and enhance the nation's fish and aquatic communities through partnerships that foster fish habitat conservation and improve the quality of life for the American people." Recognition as an FHP creates opportunities to expand partnerships and funding sources to advance Forum objectives. The mission, vision, goals, and objectives of the Forum are detailed in the Forum's strategic framework and in other documents posted on its website, www.cafishpassageforum.org.

III. Purpose

This MOU is intended to contribute to the protection and recovery of aquatic life, with a particular focus on anadromous fish species in California, by promoting collaboration among public and private sectors on fish passage restoration programs and activities.

IV. Mission, Goals, and Objectives of the Forum

Mission

The mission of the Forum is to protect and revitalize anadromous fish populations in California by restoring connectivity of freshwater habitats throughout their historic range.

Goals

Restore the connectivity of freshwater habitats throughout the state.

To achieve the mission and goal, the Forum will:

- Improve coordination of existing agency programs, rule and guideline efforts, and private sector activities across jurisdictions to improve the timeliness and cost-effectiveness of fish passage restoration efforts.
- Facilitate collaboration, coordination, and communication among state, federal and local agencies, researchers, restoration contractors, landowners and other interested stakeholders on fish passage improvement programs, funding programs, and projects.
- Expedite implementation of on-the-ground projects by identifying and addressing institutional barriers.
- Educate and increase the public and agency awareness of fish passage issues to develop support for solving problems and preventing new ones.

Objectives

1. Remediate barriers to effective fish migration.
2. Facilitate coordination and communication among agencies, agency staff, and other entities that may propose, review, or promulgate fish passage criteria within California.
3. Coordinate funding mechanisms to remove fish passage barriers.
4. Support state and federal permit coordination and efficiencies.
5. Facilitate plans to monitor and evaluate fish passage restoration effectiveness to ensure accountability.
6. Encourage existing state and national policy and actions that support fish passage improvement in California.
7. Implement education and outreach activities, targeting both the public and fish passage practitioners.

V. Management

The Forum adopted bylaws (Appendix A) that define its name, purpose, geographic scope, voting membership, governance, committees and working groups, documentation of decisions and work products, and the process to amend the bylaws.

VI. Support of Principal Signatory Agencies

For the purposes of this MOU, principal signatory agencies are defined as those participating state or federal agencies which have direct responsibilities for the protection or management of anadromous fisheries or fish habitat, or who have established fish passage restoration program elements. Other organizations, including nonprofit entities as well as county and local governments, are also recognized signatories to the MOU. All signatory agencies will participate in the Forum to implement the actions described above and will undertake projects consistent with the above objectives. They will participate in the Forum to prepare and implement annual work plans. As part of the ongoing cooperative effort to coordinate fish passage restoration that began before the development of this MOU, the signatory agencies and entities will undertake the following activities that are consistent with MOU goals and objectives and are within their statutory mandates and authorities, budgets, funding, and staffing constraints.

Any federal funding or personnel needed to carry out any federal agency responsibilities under this MOU shall be subject to the availability of appropriated funds, pursuant to the Anti-Deficiency Act (31 U.S.C. Section 1341).

The following are key responsibilities of the signatory agencies:

California Department of Fish and Wildlife (CDFW)

1. Participate in Steering Committee.

2. Participate as a member of standing committees and working groups as needed and resources permit.
3. Work with Forum partners to improve permit processes to better facilitate fish passage improvement projects.
4. Utilize the PAD in the prioritization and development of their projects, and to report their activities back to the Forum.
5. Fund the design and implementation of fish passage improvement projects and other resource enhancement efforts in high priority watersheds consistent with the Forum's Strategic Framework and CDFW's initiatives and programs, as funding allows.
6. Periodically update Forum members on CDFW activities and resource enhancement priorities.
7. Meet and coordinate fish passage activities with other MOU signatories and agencies.
8. Provide regional perspectives from CDFW's Regional offices regarding fish passage and related aquatic habitat science, data, information, and policy.
9. Participate in data collection, management, and analysis related to fish passage and aquatic habitats.
10. Promote science-based activities that support fish passage improvement programs.
11. Provide annual updates to the Passage Assessment Database for fish passage restoration projects and assessments funded by the CDFW.

California Department of Parks and Recreation (State Parks)

1. Participate as a member of standing committees and working groups as needed and resources permit.
2. State Parks will periodically update Forum members of passage issues, activities and resource priorities within State Park Units, and provide updates to the Passage Assessment Database.
3. Pursue funds to remediate blockage and impediments to fish passage at priority road/stream/trail crossings within units of the State Park System that are consistent with State Parks Mission and policies, and as resources permit.
4. State Parks will inspect and inventory road/stream crossings within the State Parks' anadromous watersheds consistent with Department priorities, and as funding is available.
5. State Parks will assess, and implement fish passage projects, consistent with State Parks Mission and policies, and other stewardship priorities, as funding and other resources become available. State Parks will use an ecosystem/landscape scale approach that focuses on natural processes and benefits multiple species, allows for natural hydrologic stream processes, protects cultural resources, and considers climate change impacts and resilience opportunities.
6. State Parks will work collaboratively with State Parks' partners, neighboring landowners and road right of ways on approved fish passage projects, as appropriate.

7. State Parks will use best practices in training its staff in the proper identification, assessment, and design criteria for fish passage.

California Department of Water Resources (DWR)

1. Participate in the Forum Steering Committee.
2. Participate as a member of standing committees and working groups as needed and resources permit.
3. Meet and coordinate fish passage activities with other MOU signatories and agencies.
4. Carry out fish passage assessments, evaluations, and specific projects per DWR's priorities as funding becomes available.
5. Inventory the DWR's fish passage project activities and funding opportunities and report these to the California Fish Passage Forum on a regular basis.
6. Provide updates to the Passage Assessment Database (PAD) as fish passage projects are completed or additional fish passage information becomes available.
7. Provide engineering and environmental technical assistance in cooperation with DFW and NMFS pending the availability of funding.
8. Provide hydrologic and other data acquisition from DWR sources for specific projects and regional or watershed assessments when appropriate.
9. Support regional and watershed scale approaches to guide planning decisions related to its participation in the California Fish Passage Forum.
10. DWR acknowledges that climate change is having a profound impact on California's natural resources including the long-term viability of anadromous fish populations and will work with MOU signatories to assist in species recovery efforts that align with DWR priorities and available funding.

California State Coastal Conservancy (SSC)

1. Continue to encourage its grantees to utilize the PAD in the prioritization and development of their projects, and to report their activities back to the Forum.
2. Continue to fund the design and implementation of fish passage improvement projects and other resource enhancement efforts in high priority coastal watersheds consistent with its Strategic Plan and as funding allows.
3. Continue to meet with the Forum and periodically update Forum members on Conservancy activities and resource enhancement priorities.

Pacific States Marine Fisheries Commission (PSFMC)

1. Provide regional perspectives from the five Pacific States (California, Oregon, Washington, Idaho, and Alaska) regarding fish passage and related aquatic habitat science, data, information, and policy.

2. Coordinate and facilitate access to and collection, management, and analysis of data related to fish passage and aquatic habitats.
3. Provide updates to the Passage Assessment Database (PAD) as fish passage projects are completed or additional fish passage information becomes available.
4. Maintain data standards and facilitate data sharing with other local, regional and national entities.
5. Promote and coordinate science-based tools and activities that support fish passage assessment and improvement.

National Marine Fisheries Service (NMFS)

1. Participate in the Forum Steering Committee.
2. Provide guidelines for the design and installation of fish passage facilities at stream crossings.
3. Provide technical assistance on hydraulic engineering issues to the extent that staff resources are available on a case-by-case basis.
4. Provide annual updates to the Passage Assessment Database for fish passage restoration projects funded by NMFS.
5. Assist in prioritizing and selecting fish passage improvement projects that are consistent with the Forum's Strategic Framework.
6. Participate as a member of standing committees and working groups as needed and resources permit.
7. Continue to provide information to members of the Forum regarding fish passage recommendations outlined in Endangered Species Act Recovery Plans.

US Department of Agriculture – Forest Service (USDA-FS)

The Pacific Southwest Region of the USDA Forest Service (Region 5) will:

1. Participate in the Forum Steering Committee.
2. Participate as a member of standing committees and working groups as needed and resources permit.
3. Provide regional perspectives from USDA-FS regarding fish passage and related aquatic habitat science, data, information, and policy.
4. Assist in prioritizing and selecting fish passage improvement projects that are consistent with the Forum's Strategic Framework.
5. Meet and coordinate fish passage activities with other MOU signatories and agencies.
6. Carry out specific fish passage projects in cooperation with cost-sharing partners as specific funding and authorizations become available (through the Forum and or other funding sources).

7. Coordinate internally with other Forest Service Regions and participate with local, State, and Federal agencies as well as private organizations to develop consistent criteria for analyzing sites, collecting data, and storing information that is accessible to the participating organizations and the public.

U. S. Fish and Wildlife Service, Pacific Southwest Region (Service)

1. Coordinate the National Fish Passage Program, other Service Programs and Service Field Office activities involving fish passage within the State of California and with the Forum.
2. Continue to support cooperative fish passage activities through the National Fish Passage Program and other Service programs as resources permit.
3. Promote integrity and scientific excellence within the Forum and involvement in the larger scientific community.
4. Disseminate Forum goals, objectives, and activities to other federal, tribal, state, and local agencies; watershed workgroups and other non-profit organizations; landowners; and the public.
5. Coordinate fish passage activities with other MOU signatories and agencies.
6. Participate as a member of standing committees as needed and resources permit.
7. Manage and coordinate grants and cooperative agreements on behalf of the Forum for Service National Fish Habitat Action Plan funding provided to the Forum.
8. Provide annual updates to the Passage Assessment Database for fish passage restoration projects and assessments funded by the Service.
9. Work with the Forum Coordinator and chair to provide coordination with Regional and National Service Fish and Aquatic Conservation Staff and the National Fish Habitat Board.

California Trout (CalTrout)

1. Participate in the Forum Steering Committee or other committees such as the Science and Data Committee as needed and resources permit.
2. Coordinate with Forum members to restore steelhead and salmon, save imperiled native trout, and protect California's blue-ribbon waters.
3. Update the Passage Assessment Database as fish passage projects are completed or additional barriers are identified.
4. Advocate for fish and water policy that advances protection, restoration and enhancement of steelhead, salmon, and trout habitat.
5. Support projects that restore anadromous fish habitat using science, partners, and a collaborative approach.

Trout Unlimited (TU)

1. Support the Mission, Vision, Values, and Goals of the Forum.

2. Will offer our expertise to help ensure the health and success of the organization.
3. Will work with the rest of the team to communicate the organization's role to our most important audiences.
4. Will attend in person or by phone, at least 2-3 meetings held each year and, will continually communicate with the Forum Coordinator, Chair, Co-Chair and other members to ensure we understand all current affairs.
5. Will actively participate in all requests for our assistance and response.
6. Provide updates to the Passage Assessment Database for fish passage restoration projects and assessments completed by TU.

VIII. Contributing and Supporting Signatories

Contributing signatories are members of the Forum Steering Committee and will participate in and contribute, as resources permit, to the implementation of goals, objectives, and work plans. Supporting signatories support the concept, goals, and objectives of this MOU.

IX. Other Provisions and Agreements

This agreement is intended to be in furtherance of mutual goals for protecting watershed resources. This MOU is intended to embody general principles, and does not create contractual relationships, rights, obligations, duties or remedies between or among signatories.

Agency actions are subject to statutory authority and regulatory requirements. Nothing in this MOU is intended to expand or limit the legal authority or responsibilities of any signatory agency, entity or organization.

Nothing in this MOU shall limit the participating agencies in carrying out their individual statutory responsibilities.

This MOU does not modify or supersede other existing agreements, programs, MOUs, plans, regulations or executive orders.

Nothing herein alters the existing authorities or responsibilities of any party nor shall be considered as obligating any party in the expenditure of funds or the future payment of money or providing services. The expressions of support by state and federal agencies under this MOU are subject to the requirements of the federal Anti-Deficiency Act and to the availability of appropriated funds. The parties acknowledge that this MOU does not require any agency to expend its appropriated funds unless and until an authorized officer of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

Consistent with federal law, nothing in this document constrains the discretion of the President or his or her successor from making whatever budgetary or legislative proposals he or his successors deem appropriate or desirable.

This MOU is not intended to, and does not, create any other right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, the State of California, any agencies thereof, any officers or employees thereof, or any other person.

X. Principal Signatory Agencies

Any party may withdraw from this MOU upon 30-days' notice to the other parties. This MOU may be amended only upon the written prior approval of each signatory. Other entities may execute this MOU and thereby become a Party. This agreement is executed as of the date of the last signature and is effective through December 31st, 2030, at which time it will expire unless extended. This agreement will be reviewed annually by the Steering Committee.

PAUL SOUZA Digitally signed by PAUL SOUZA Date: 2020.09.11 14:24:26 -07'00'

Paul Souza, Regional Director — Date
U.S. Fish & Wildlife Service, California Great Basin

August 20, 2020

Barry A. Thom — Date
Regional Administrator
West Coast Region
National Marine Fisheries Service

Digitally signed by BARNIE GYANT Date: 2020.09.22 12:28:47 -07'00'

Randy Moore, Regional Forester
USDA Forest Service, Pacific Southwest Region — Date

9/07/2020

Randy Fisher – Executive Director — Date
Pacific States Marine Fisheries Commission

9/30/20

Charlton H Bonham – California Department of Fish and Wildlife — Date

DocuSigned by:
Armando Quintero
8637583B538B4CD...

12/21/2020

Armando Quintero – California Department of Parks and Recreation Date

Karla A. Nemeth

1/5/2021

Karla A. Nemeth – CA Department of Water Resources Date

Sam Schuchat

11/2/2020

Sam Schuchat – Executive Officer
State Coastal Conservancy
Date

10/21/2020

Curtis Knight, Executive Director California Trout Date

9/22/2020

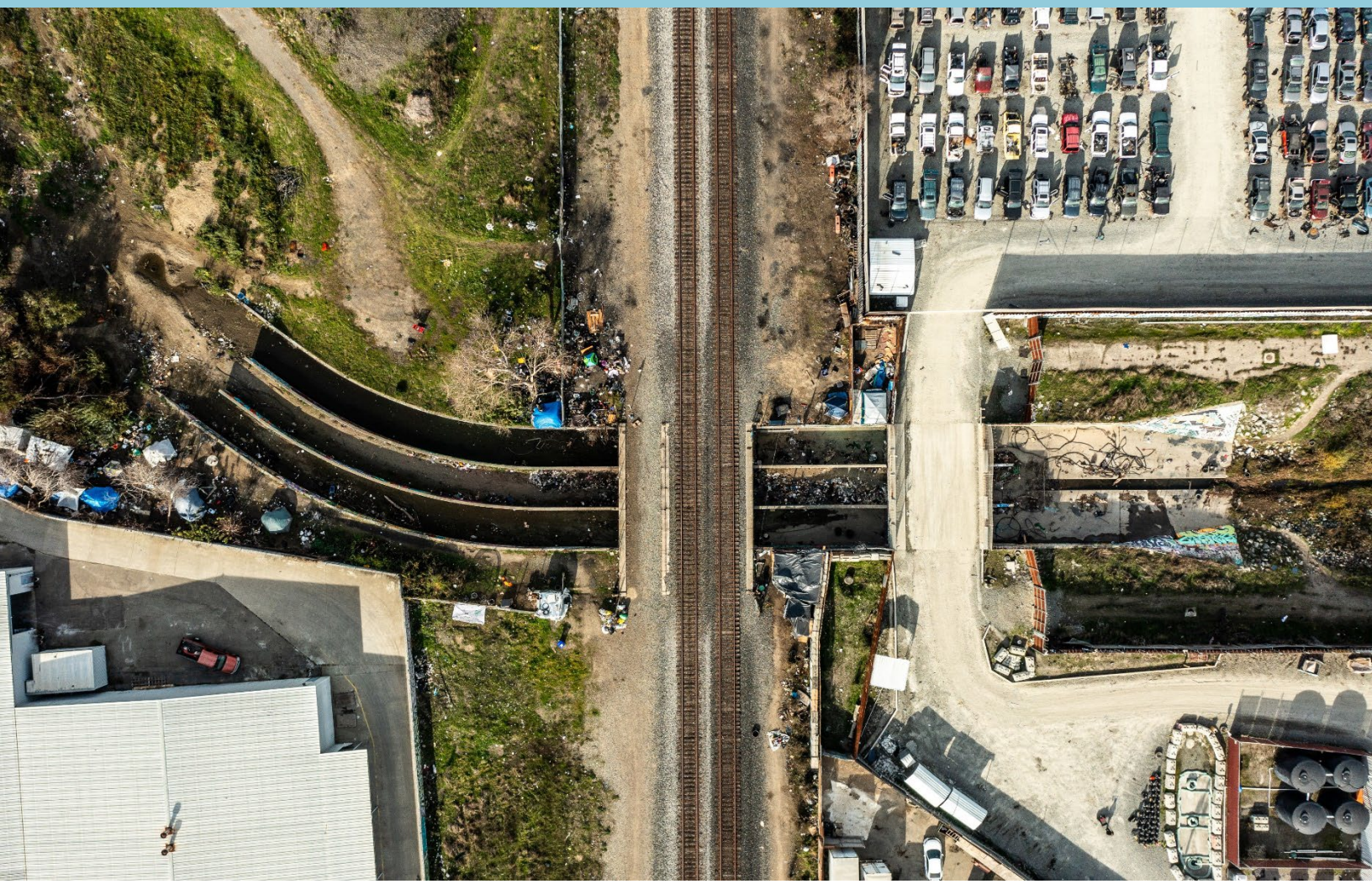
Brian Johnson – Trout Unlimited Date

CALIFORNIA FISH PASSAGE FORUM

BACKGROUND INFORMATION

STRATEGIC FRAMEWORK

2023–2028



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Introduction

Aquatic habitat in anadromous streams and rivers in California has been subject to substantial change and degradation. Although numerous factors have contributed to the status of these habitats, loss of connectivity within and among watersheds has been recognized in recovery plans and watershed assessment documents as a significant impediment to supporting the recovery and health of anadromous fish populations. All habitat restoration activities in anadromous watersheds are linked to the ability of migratory aquatic species to access these ecosystems.

Barrier removal or modification is a cost-effective approach to the short-term recovery of anadromous fish. Man-made barriers to fish passage include road-stream intersections, pipeline or other infrastructure crossings, erosion control/flood control structures (e.g., riprap, concrete channels), and dams that block or delay migration. These barriers impact both adult and juvenile fish by preventing full use of available habitat or altering habitat and hydraulic conditions, i.e., affecting instream migration flows.

During the late 1990s, Washington, Oregon, and Alaska initiated coordinated statewide fish passage efforts. In November 1999, the California Natural Resources Agency (CNRA) convened a group of interested state, local, and federal agencies, fisheries conservation groups, researchers, restoration contractors, and other interested parties to discuss ways to restore and recover anadromous fish populations by improving fish passage at man-made barriers. This effort was part of CNRA's effort to implement an eight-point California Coastal Salmon and Watersheds Program. One of the major focal points in this program involves coordinating fish passage activities in the anadromous waters of California, and thus addressing the major limiting factor identified in most recovery plans for listed anadromous fish species. The outcome of the initial convening was the creation of the California Fish Passage Forum (Forum), a collaborative group that works to implement and coordinate fish passage activities across the anadromous waters of the state.

The Forum is now one of 20 national fish habitat partnerships, which attempt to conserve freshwater, estuarine, and marine waterways and fisheries in the United States.

The Forum recognizes that funding for design, implementation, and monitoring of fish passage projects is often limited and inhibits the number of projects that can be implemented in a timely manner. To address this issue, the Forum actively seeks ways to coordinate fish passage funding, identify optimal locations to make strategic investments, contribute to science and data associated with fish passage issues, and foster new or alternative funding sources. The Forum is uniquely positioned to leverage partnerships, skillsets, and knowledge to expedite recovery and conservation of California salmonids.

Factors Impacting Anadromous Fish Habitats in California

Many anadromous aquatic habitats in the western United States have been highly altered from their historic condition. The habitat changes are the result of natural and human-induced stressors, including changes in runoff patterns and water storage, land use and natural resource extraction activities, spatial and temporal changes in connectivity, non-native species introductions, increased predator populations, commercial and recreational fishing, hatchery operations, natural environmental variations, and both natural and human-induced wildfires.

To address these and other stressors, habitat restoration activities, many of these locally based and relatively site-specific, have occurred in California and the Pacific Northwest. In addition, regional assessments of restoration needs and prioritization related to anadromous fish and their habitats have occurred. Many of these assessments ranked connectivity as the top priority for strategic regional restoration (Roni et al. 2002, Hooybar 2003) because connectivity-focused projects have the highest likelihood of success, are cost-effective, show immediate results, are long lasting, and can guide where other restoration activities should be implemented based on restored access to larger areas of habitat.

In California, several recent documents related to recovery and management of federally and state listed fish species have also designated fish passage as a high priority.

- The Recovery strategy for California Coho Salmon (2004) and the Steelhead Restoration and Management Plan for California (1996), both published by the California Department of Fish and Wildlife (CDFW), list fish passage as high priority recovery tasks.
- The Open Rivers Initiative (NMFS) and the National Fish Passage Program (USFWS) are based on the fundamental concept that removing fish passage barriers is a priority action for species recovery.
- National Marine Fisheries Service (NMFS) Recovery plans for Coho salmon and steelhead identify fish passage barriers as a major limiting factor in the recovery of listed salmonids in California. Pacific Lamprey is proposed for listing, and Green Sturgeon have been listed as Threatened, and fish passage barriers are identified as a major threat to their populations.
- Other federal (Natural Resources Conservation Service [NRCS]), state, and regional fish passage programs have been created because of fish passage barriers. The U.S. Fish and Wildlife Service (USFWS) has completed recovery plans for short nose sucker and lost river sucker populations, and identifies removing fish passage barriers as a primary action to recovering both sucker populations.

The Forum recognizes that fish passage is an important issue to numerous aquatic species in anadromous and non-anadromous waters. The Forum also acknowledges the importance of other

limiting factors for anadromous fish survival, such as healthy riparian habitat, and water quality and quantity. Many of the Forum Memorandum of Understanding (MOU) signatories also work to address issues of water quality, quantity, policy and practice modifications, and other forms of in-stream and riparian habitat restoration that will improve the overall anadromous and resident fish populations within the Forum's geographic scope. The Forum recognizes, through its focus on fish passage issues, that without access to freshwater habitat, other anadromous fish restoration efforts will not succeed.

Figure 1: The top photo features an example of a fish barrier that was remediated on the Shasta-Trinity National Forest. The bottom photo features the solution to the barrier—an open-bottom arch composed of natural streambed. This barrier remediation project created newly accessible habitat for Coho Salmon, Klamath Mountain Province steelhead, and Pacific lamprey. Photo credits: Shasta-Trinity National Forest

Fish Species Impacted by Passage Barriers in California

Anadromous Species

California streams and rivers with access to the ocean were historically home to several native anadromous fish species. These include Chinook Salmon, Coho Salmon, Chum Salmon, Pink Salmon, steelhead/rainbow trout, coastal cutthroat trout, green sturgeon, white sturgeon, Pacific Lamprey, river lamprey, eulachon, and three spine stickleback. American shad and striped bass are also prevalent non-native anadromous species in many systems.

Historically, anadromous fish passage efforts in California have focused on Chinook Salmon, Coho Salmon, and steelhead. Pink Salmon have only occurred rarely in California since the latter half of the 20th century. Chum salmon are slightly more common than Pink Salmon but have a limited presence in California. Coastal cutthroat trout are a State of California Species of Special Concern but have no federal status and have generally not been the focus of fish passage efforts. Passage impacts on green and white sturgeon are almost exclusively limited to large dams, therefore, passage improvement projects for sturgeon are complex, expensive, and uncommon. Efforts are underway up and down the West Coast to analyze and mediate the impact of barriers on lampreys. These efforts are often linked to passage projects associated with salmon and steelhead and once refined, will likely consist mainly of additions or alterations to traditional salmonid passage designs. Passage does not likely have a major impact on eulachon as they are found in the lower reaches of coastal rivers and streams and spend very little time in freshwater. Three spine sticklebacks are very adaptable and demonstrate a wide variety of life history strategies that likely greatly reduce the impact of barriers.

Other Species

California has a limited number of federally listed fish species, or fish species included in the State Wildlife Action Plan, that occur in anadromous waters. Delta smelt are listed as threatened under the federal and California Endangered Species Act (ESAs). Longfin Smelt are listed as threatened under the California ESA, but are not listed federally. Both delta and longfin smelt have been subjected to degradation of their native habitats, however passage is not considered an important factor in the declines of these species. Shortnose suckers are listed as endangered under the federal and California ESAs. Klamath largerscale suckers are included in the SWAP but are not listed under the federal or California ESA. Both sucker species are uncommon in the anadromous reach of the Klamath River.

The Forum will continue to focus on fish passage assessment, prioritization, and implementation for salmonids and lamprey. Additionally, the Forum will consider actions to address other anadromous

and resident species in anadromous watersheds as the need arises and cost-effective passage methods are developed.

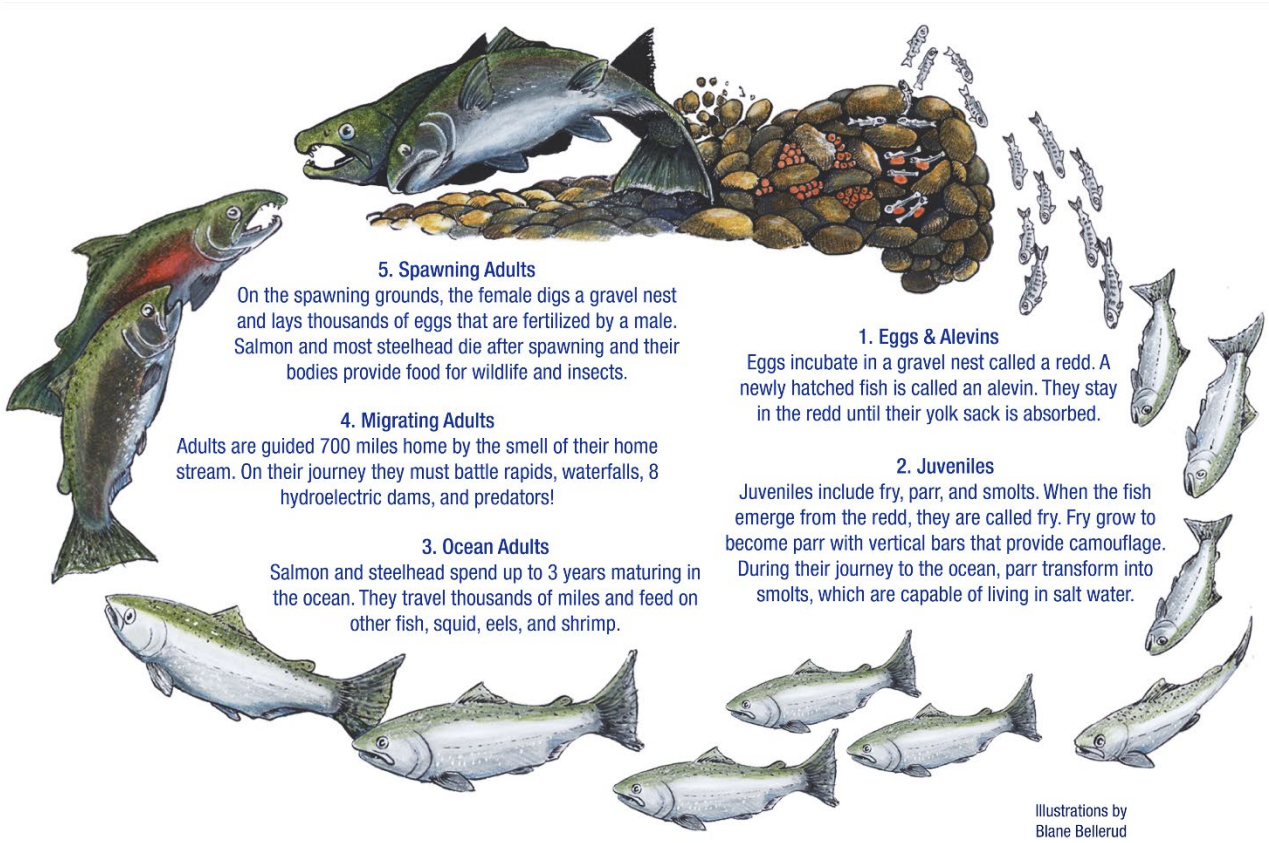

Figure 2: The salmon life cycle. NOAA Climate.gov

History of the Forum

California's historically bountiful anadromous fishery depends on the ecological integrity of dozens of streams and rivers that flow into the Pacific Ocean along the state's 1,100-mile coastline. These streams provide the habitat that salmonids and other anadromous fish require during the spawning and juvenile phases of their life.

During the 19th and 20th centuries, as roads, bridges, and dams were built on public and private lands along waterways, and as water was diverted by various means, thousands of barriers were erected, blocking the passage of anadromous fish. These barriers impact both adult and juvenile fish by preventing full use of available habitat or altering habitat and hydraulic conditions. Consequently, many salmon, steelhead, cutthroat trout, lamprey, and sturgeon populations have experienced significant declines, and the tribal, sport, and commercial fisheries that depended on some of these populations have been impacted and, in many cases, cease to operate.

Man-made barriers to fish passage include road/stream intersections, pipeline or other infrastructure crossings, erosion control/flood control structures (rip-rap, concrete channels, e.g.), and dams that block or delay migration. In some cases, previously installed fish passage structures, such as fish ladders, act as barriers because of poor design, or construction, operation, and lack of maintenance.

In October 1999, the California Resources Agency (CNRA) established the eight-point California Coastal Salmon and Watersheds Program, which called for the coordination of state, federal, and local partners working toward the goal of restoring salmon and steelhead populations to naturally sustainable levels. At the time, fish passage, although recognized as a major threat to anadromous fish species in California, was also determined to potentially yield the greatest cost-efficiency for short-term restoration activities. Based on this recognition, the program included an objective to coordinate fish passage activities in California.

To accomplish this objective, the CNRA convened a group of interested state, local, and federal agencies, fisheries conservation groups, researchers, restoration contractors, and others to discuss ways to improve fish passage at man-made barriers. The success of this coordination led to the establishment of the California Fish Passage Forum, of which many agencies and organizations are members.

The Forum identified the need for improved efforts to identify barriers, evaluate and prioritize restoration opportunities, and implement projects in a timely fashion. It also targeted administrative, financial and technical impediments to addressing these issues, including information gaps, lack of watershed-level assessment and planning, and poorly coordinated project review and permitting

processes. Forum participants worked together to develop short-term solutions for these types of problems for several known high priority fish passage projects. The Forum also established subcommittees for coordinating activities related to fish passage inventory and assessment protocols, data format and access protocols, information and literature collection, permitting, training, and public education and outreach.

The Passage Assessment Database

The Forum's first step in charting a course for restoring passage for California anadromous fish was to determine the quantity and severity of existing migration barriers. In collaboration with the California Coastal Conservancy and the Pacific States Marine Fisheries Commission, the Forum developed the Passage Assessment Database (PAD). The PAD is an ongoing map-based inventory of known and potential barriers to anadromous fish in California, compiled and maintained through a cooperative interagency agreement. The PAD compiles currently available fish passage information from many different sources, allows past and future barrier assessments to be standardized and stored in one place, and enables the analysis of cumulative effects of passage barriers in the context of overall watershed health. The PAD database identifies and compiles information on more than 27,000 potential barriers to fish passage in California's watersheds. 4040 of those are total barriers, while 1720 are partial, and 1800 are temporal barriers, either total or partial.

Correlated with state and federal recovery plans for endangered Coho salmon and steelhead, the PAD is a tool that helps to inform high priority fish passage barriers in critical watersheds.

The database is designed to capture basic information about each potential barrier. It is designed to be flexible; as the database grows, other modules may be added to increase data detail and complexity. The PAD also makes it possible for Forum members to track project implementation (Figures 5 and 6).

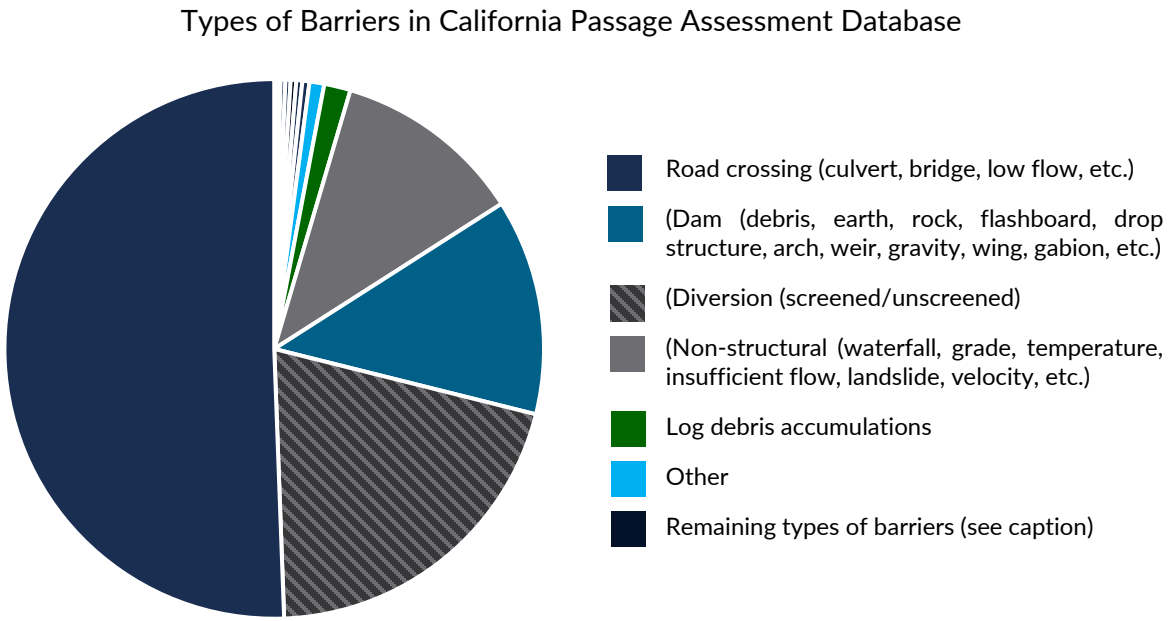

Figure 3: A percentage breakdown of the types of passage barriers described in the California Passage Assessment Database. Road crossings, diversions, dams, and non-structural barriers make up 95% of barriers. Log debris accumulations are 1% of barriers. "Other" types of barriers that make up less than 1% each of total barriers are fish traps, gravel/borrow pits, flow measurement weir, fish passage facilities, utility crossings, tide gate, flood control channels, and grade control structures.

Figure 6: Completed Fish Improvement Projects
2004-2020

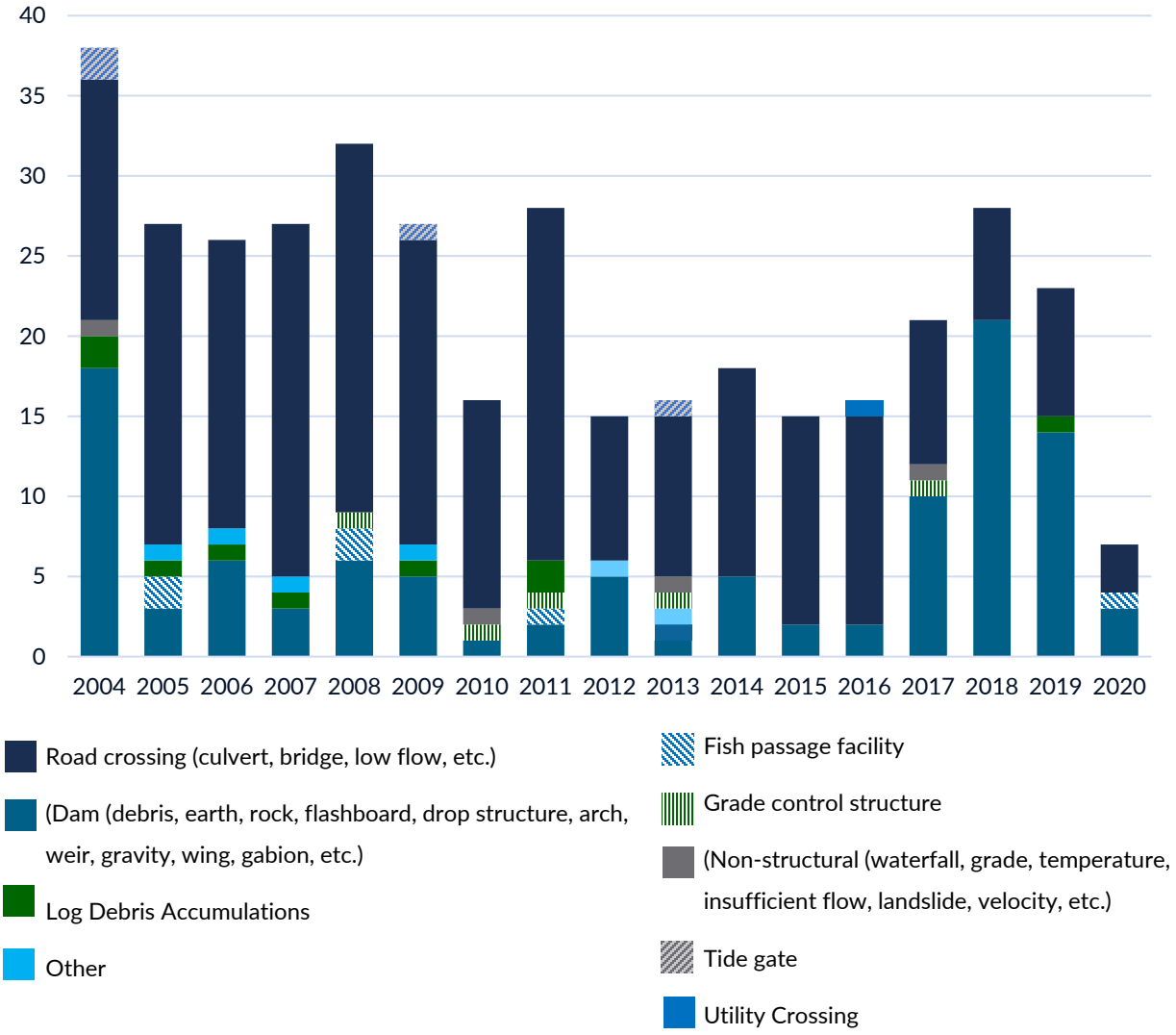

Figure 4: Stacked bar chart of types of barriers remediated each year as listed in the California Passage Assessment Database. These totals represent only those listed in the PAD and do not include recent remediations that may not yet be updated in the PAD.

Source: California Department of Fish and Wildlife, Passage Assessment Database, October 2023 version (www.calfish.org/pad/).

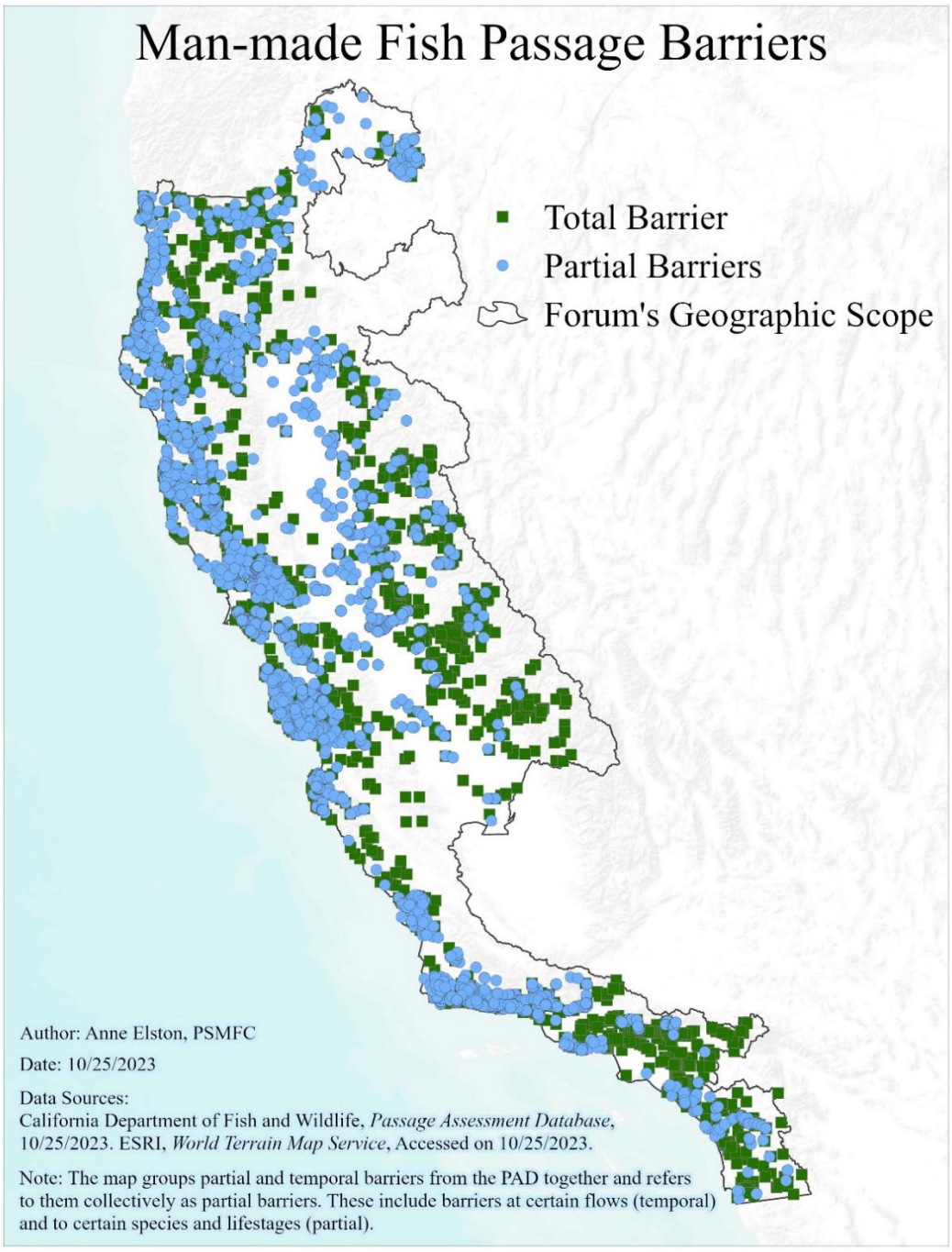

Figure 5: Man-made fish passage barriers within the Forum's geographic scope documented in the Fish Passage Assessment Database (PAD) as of December 21, 2018.

A Look Back - The Last 5 Years

Table 1: Forum Contributions to On-The-Ground Restoration

Projects Funded	2019	2020	2021	2022	2023
Iron Horse Vineyards Dam Removal	$20,039				
Lamprey Passage at Rowdy Creek	$19,500				
M-1 Road Fish Passage Improvement	$81,857				
Seiad Creek Off-Channel Connection	$28,856				
Upper Noyo River– Skunk Train	$15,000				
Lamprey Passage Design	$41,612				
Applying FISHPass in the Smith River		$28,000			
Santa Margarita River Fish Passage & Bridge Replacement		$47,410			
Strawberry Creek at Clam Beach Fish Passage Remediation		$31,055			
Montague-Grenada Weir Retrofit & Barrier Removal		$49,269			
West Tule Creek Diversion Fish Passage		$15,301			
Mid Klamath Creek Mouth Enhancement			$41,216		
/ildcat Creek Fish Passage & Community Engagement Phase 1			$45,000		
Ross Valley Sanitary District Shady Lane Abandoned Sewer and Barrier Removal			$20,190		
Lawrence Creek Off Channel Habitat Connectivity			$48,029		
Fish Passage Project Media Acquisition Effort			$8,000		
Lower Stotenburg Creek Fish Passage Project				$49,952	
/ildcat Creek Fish Passage & Community Engagement Project Phase 2				$45,000	
Hosie Low Water Crossing				$50,000	
PSMFC GIS Data Steward				$14,817	
Little Case Fish Passage					$26,424
Mid-Klamath Tributary Fish Passage Improvement					$45,925
Native Fish Passage in San Joaquin River at Eastside Bypass Control Structure					$53,736
North Fork Ryan Creek Fish Passage Design					$61,486
signing for Sturgeon Passage in San Joaquin Eastside Bypass					$50,192
Long Creek Fish Screen, Sycan Marsh Preserve					$101,630

Table 2: NFHP 10 Waters to Watch

Projects	2019	2020	2021	2022	2023
Upper Green Valley Creek Fish Passage	X				
Monitoring Small Dam Removal Effectiveness in Southern California		X			
Trabuco District Dam Removal Project		X			
Lawrence Creek Off Channel Habitat Connectivity Project			X		
Wildcat Creek Fish Passage & Community Engagement Project Phase 2				X	
Mid-Klamath Tributary Fish Passage Improvement					X
Native Fish Passage in San Joaquin River at Eastside Bypass Control Structure					X

Table 3: Science and Data Accomplishments

Projects	2019	2020	2021	2022	2023
Support PAD	X	X	X	X	X
Supported the NorWeST Stream Temperature Database	X	X			
Developed Web-Based Interface for FISHPass	X				
Examined best management practices and protocols associated with fish passage monitoring	X	X	X	X	X
Plan Forum involvement in National Barrier Prioritization Tool					X

Table 4: Education and Outreach Accomplishments

Projects	2019	2020	2021	2022	2023
Held two to three in-person meetings each year, inviting local partners and interested parties.	X	X	X	X	X
Collaborate with the Pacific Marine Estuarine Partnership (PMEP) and the Pacific Lamprey Fish Habitat Partnership on a MSCG funded Barriers to Tidal Connectivity Summit	X	X			
Produced StoryMap on Klamath Dam Removals		X			
Redesigned Forum Website					X
Maintained website	X	X	X	X	X
Produced Forum Fact Sheets	X	X	X	X	X
Produced living Outreach Calendar					X

Strengths

- Convening fish passage practitioners for education (e.g., Eel River Delta event)
- Connecting with other fish passage practitioners and scientists.
- Data and science collaboration (Passage Assessment Database)
- Distributing limited funds across multiple projects and leveraging funds, i.e., diversifying investments into a variety of projects.
- Identifying and promoting the importance of effectiveness monitoring and providing guidance on effective monitoring techniques.
- The diversity of Forum membership; and
- The timing and opportunity of funds disbursed in a different cycle than other California funds.

Challenges

- Current Forum members may not have the amount of influence Forum members once had because of delegation of Forum memberships.
- The need for more engineers to be engaged and informed in fish passage efforts.
- The lack of nongovernmental diversity in Forum membership

Opportunities

- Help people with prioritizing strategic investments in fish passage, using tools, such as FISH*Pass*.
- Resources are limited, but the Forum can help guide how people invest.

- Monitoring, planning, and assessment are the most difficult tasks to fund, which represents a niche the Forum can fill.
- Affiliations, such as FishPACs could increase the Forum's level of potential grant funding and could create a higher NFHP ranking, improving eligibility for federal fund disbursements.
- Expanding focus to instream flow barriers as a secondary priority.
- Track progress in removing barriers.
- Improving the PAD to inform more elements of passability and thus linking the PAD with future prioritizations.
- Consider forming an executive committee to engage decision makers at appropriate times/trigger points, such as updating the MOU.